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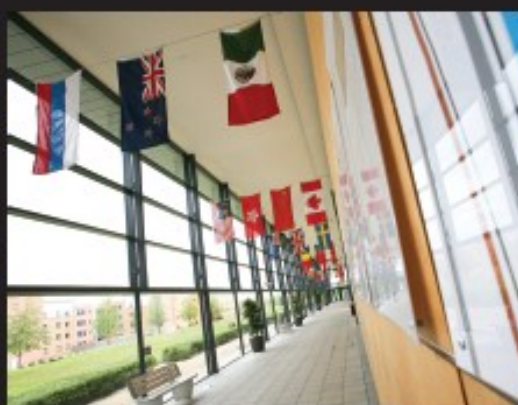
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The Seventh International Blended Learning Conference

Wednesday 13-Thursdady 14 June 2012

*Reflecting on our achievements -
What's next for technology-enhanced
learning and teaching?*



The Fielder Centre, University of Hertfordshire, Hatfield, Hertfordshire, UK

Contents:

Abstracts:

1. Accessibility maturity of TEL in UK HE: JISC TechDis lifts the lid on a decade of progress

-Dr Shirley Evans, Dr Simon Ball

1.

2. Are learner perceptions of digital literacy skills teaching affected by demographic factors?

-Marion Hall, Ingrid Nix, Kirsty Baker

12.

3. “What do I need?” – evaluating learner perceptions of digital literacy skills development to inform enhancements to learning design

-Ingrid Nix, Marion Hall, Kirsty Baker

21.

4. First Steps in Bridging the Gap between the Virtual Learning Environment and Social Media – Student Attitudes

-Guy Saward , Alan McCall, Lynette Pye, Samuel Nathan Richards

32.

5. Creating academic skills e-resources to increase flexible learning opportunities and promote independent learning

-Mary McCauley

40.

6. An Application of pedagogical principles and values implemented through Oaklands College HE Academic Community online platform – results and barriers.

-Dr Miodrag Ivanovic, Sharon Stone

42.

7. Cultivating a viral community of practice to drive institutional enhancement through the promotion of video-enhanced learning, feedback and assessment

-James McDowell

64.

8. The Ikea Approach to Teaching or “Leave the Kids Alone”

-John Murphy, Philip Cowan

71.

9. Enhancing Student Critical Reading of Texts Through The Use of Blogs

-Jeremy Kidwell, Prof .Michael Northcott, Dr. Jessie Paterson

82.

Enhancing Student Critical Reading of Texts Through the Use of Blogs

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Abstract: For several years, the School of Divinity has pursued innovation in pedagogical use of blogging to enhance the student learning and digital experience and in particular engagement in tutorials and seminars. However, we have observed that when the blogging tool was used primarily as a vehicle for students to report on their critical reading of key texts, students often isolated the blog from the text, reducing the effectiveness of the tool. Therefore, this project implemented the Wordpress plug-in digressst.it (<http://digressst.it>) which has been developed for pedagogical use to bring text and writing closer together, allowing blog comments to appear as marginal comments next to the relevant part of the key reading. This tool was implemented during the second semester of the academic year 2011-12 in the first year course within the School of Divinity: "Christian Ethics, Sources". For each of the six tutorial groups a separate incidence of the tool was made available containing all the weekly readings (three per week) in a digital format. This paper will discuss in detail the usage of the tool and our analysis of its success based upon evaluation from both staff and students.

Introduction

More than a decade ago, blogging became a mainstream feature of the internet (Wortham 2007). Since then, blogging platforms and writing conventions for blogging have matured towards a more visually elegant and socially nimble architecture that is now commonly referred to under the heading "Web 2.0" (O'Reilly 2007; Harrison, & Barthel 2009; O'Reilly, & Battelle 2009). Yet, as several recent studies have noted, use in higher education contexts of Web 2.0 tools has lagged far behind their mainstream availability (Harrison, & Barthel 2009; Brown, & Adler 2008; Deng, & Yuen 2012; Vaughan 2010; Berlanga et al 2010; Lim et al 2010). More sophisticated recent case-study based research on the use of blogging technology in learning has focused on the impact and effectiveness of blogs in different learning contexts. Researchers have focused in large part on the pedagogical use of blogs to encourage critical self-reflection and independent learning (Wopereis et al 2010; Yang 2009; Ray, & Coulter 2008; Hourigan, & Murray 2010; Hernández-Ramos 2004; Ward 2006). Though these are not mutually exclusive it is worth noting that, given the social architecture of blogs, collaborative peer-learning is a second and perhaps even more relevant learning context in which to enhance student learning through the use of blogs (Deng, & Yuen 2010; Williams, & Jacobs 2004; Mendenhall, & Johnson 2010).

Nearly a thousand years ago, in an environment which was to become the precursor for the modern university, monks shared precious manuscripts of key texts. As these manuscripts passed from one hand to another, it was accepted practice for readers to provide marginal notation ("marginalia") to augment the text with critical commentary. Marginal notation often grew into a conversation over time as more and more readers provided their commentary. Following this same pattern, several software platforms have been developed that follow this sort of annotation model. The benefit of a social annotation platform is that it can enhance student learning by leveraging both annotation and peer-engagement in learning (Johnson et al 2010; Razon et al 2012; Huang et al 2012; Lick, & Lebow 2003; Mendenhall, & Johnson 2010).

For this case study, we sought to assess how (or whether) blog technology might improve student critical reading of texts, using what Mendenhall and Johnson call a "social annotation model learning system" or, SAM-LS (Mendenhall, & Johnson 2010).

Our assessment of blogs for our study was also driven by a broader concern to better understand student perceptions of their learning experience through blogs, so that we could identify whether students perceived this to be a fruitful learning experience and identify areas of their learning experience which might be candidates for further improvement or modification.

Project: Learning on the Margins

For the past two years, in an attempt to provide more interactive opportunities for student learning, academic staff and tutors implemented student writing using blogs for a first-year Divinity course at the University of Edinburgh, "Christian Ethics: Sources." The intention was to provide an online medium by which students could provide weekly reflection on assigned readings and begin a conversation by responsive comments online in advance of tutorials. An additional benefit has been that students could continue to access this collaborative conversation while revising for their exams.

For the first two years in which learning with blogs was implemented, students used the University-provided VLE: WebCT/Blackboard with its built-in blogging feature. There were several problems with this, the first being one of interface. Users found the WebCT interface to be inelegant, unintuitive, and detached from the object of their study. Rogers argues that these VLEs have a "conventional relationship to content" and fail to provide a socially saturated user experience: "these interfaces do not participate in society, but form an enclosure from which to observe its workings from afar" (Rogers 2011). Along similar lines, Halavais links this complaint to student learning; "If the aim in using a blog is to allow students to be more self-motivated, to allow them to explore and to make learning personalized, monolithic and closed platforms like that provided by Blackboard tend to negate these aspirations" (Halavais 2011). In evaluation and discussion (which was often generally positive with respect to the use of blogs) a consistent complaint expressed by both students and staff followed these general contours: they found the interface for blogging was unintuitive and unattractive. It is also important to note that digital reproduction of texts in a VLE presents a change in the material culture of learning. When students read a physical copy of the course texts their interaction is more visceral through underlining, highlighting or writing on them. This physical engagement aids learning and when students bring these modified texts into the course tutorials their private study also enhances the social learning experience. If the digital learning experience is not to be a poor substitute, some attention must be paid to the full pedagogical experience offered by embodied engagement with texts such that full student engagement (and related understanding) is not to be lost.

The second problem with our implementation of student learning through blogs was related to a mismatch between the architecture of the course curriculum and the design of the blogging tool. A key learning objective for the course (particularly because it is part of the first-year curriculum) is for students to develop critical reading skills through close analysis of key historical texts. Each week two excerpts from classic texts on moral philosophy and one related text from the bible are highlighted for students to read and their reading is meant to be both comparative and critical. The blogging platform provided in WebCT is very simple. Students can blog and then others can write comments on the original post. Unless a student has a book open next to the computer while blogging, the interface isolates reflection from text. Student engagement with the texts in the course tended to be superficial and so we wondered if student engagement might be curtailed by the structure of the tool. Instructor and tutors noted that student writing tended to avoid citations and discussion of themes presented in the set texts was only superficially related to the actual treatment of that theme presented by the author. There was often robust conversation among students, but this could often wander far afield from the concerns and modes of thought expressed in the assigned reading. Inasmuch as the forms by which communication is structured may determine their meaning, tutors and the course manager wondered whether the WebCT interface might be a contributing factor to this superficial treatment of texts. The more casual medium encouraged students to write, but this more casual mode seemed to lack a balancing influence which might encourage students to read and write with care.

For school year 2011-2012, the course curriculum was extensively rewritten and we obtained a grant to fund the deployment and evaluation of a new blogging software platform that could be fine-tuned to the particular pedagogy of this course and its student population. Among the several other SAM-LS platforms available (HyLighter, co-ment and eMargin) we chose to deploy the digress.it platform for our project. "Digress.it" (originally titled "commentpress") extends the Wordpress blogging platform to provides a marginal space in which blog posts and comments appear as textual annotation. This visual structure provides an opportunity to avoid the tendency described above in which blog technology encourages an atomised conversation in which and reader are isolated from one another. In digress.it, blog comments become the basis for threaded conversations which remain visually tethered to the margins of the text (Read 2007; Fitzpatrick 2007). The concept has been proven with trials in other courses, primarily in Literature and History and the platform has already received commendations, including a White House "Leading Practices Award for Leadership, Governance, and Culture Change." This pilot was one of the first such trials in a School of Divinity.

Results

Adopting an exploratory qualitative approach, our study relied upon questionnaires, interviews, students' blog writing, and site analytics as the main sources of data. For each student tutorial group, a paper-based questionnaire was administered in the final group meeting. The questionnaire sought to ascertain student perceptions and the factors that affected their engagement with blogging in the course. We had a return rate of 67% (based on 45 questionnaires returned out of 67 enrolled students). To enhance our understanding of the course dynamic surrounding the blogs, course tutors were also interviewed. Finally, to test student perceptions, we also collated questionnaire results against site analytics data and performed a rudimentary quantitative analysis of student writing in the 2011 (WebCT) and 2012 (digress.it) courses.

Based on questionnaire results, students concluded that the use of blogs in the course helped their learning. 55% of students thought that their writing had improved over the semester. Questionnaires completed at the end of the course indicate that 69% thought the web based blogging platform had improved their learning while only 31% of students thought that their experience blogging did not help prepare them better for weekly tutorials than independent reading of the assigned texts and preparation using a tutorial sheet.

The success of a learning objective like writing improvement is hard to quantify. Student performance on exams remained essentially the same (the difference in median student performance on exams for the two years was only a single percentage point and median student performance for their essay writing was the same for both years). In analysis, we found that citation style varied substantially from one student to another, making a simple count of citations invalid, as this would not account for students who made sophisticated use of paraphrasing. Similarly, student blog writing in the course was not graded against a granular rubric, as such an exercise would make tutor workload untenable. Given these complexities, we have not sought to develop a quantitative heuristic, but instead have chosen to rely on student feedback to assess the project. With this in mind we note here two specific areas in which students reported that blogging enhanced their learning before proceeding to some analysis.

1. Collaborative Learning

One aspect of student learning experience which was consistently highlighted among favorable traits was the collaborative aspect. When asked, "What did you most like about the blogging tool?" almost half of student replies highlighted collaboration. These voices highlight student perception:

You could use others comments to understand the texts more

...shared perspective of everyone in the class was useful

Aided my understanding as I saw others thoughts

being able to debate with others about their thoughts

other peoples comments triggered thoughts

Further, when asked what they disliked most about the tool, some student replies indicated that they were intimidated in being exposed to peer-discussion of their writing or were dissatisfied with the level of collaboration that the tool required of them. Several student comments about what they were dissatisfied with highlight this concern:

the publicity of the comments

the fact that when a person is wrong is is public, not private

other students reading your comments when you did not feel they were good

Ironically, others noted by way of expressing dissatisfaction with the tool that they wanted to take collaboration even further and thread their conversations two or more levels deep - i.e. comment on comments. This seems to indicate overall that the tool encouraged collaborative learning, whether or not students were comfortable with the idea.

2. Learning Critical Reading by Focusing on the Text

Also revealing was student feedback regarding whether their understanding of the purpose behind their use of the tool had changed over the duration of the course. A number of those students who indicated that their perception had changed (39%) wrote that their initial expectation had been that the tool was for assessment (we discuss some possible provenance of this expectation further below). When asked, "At the start of the course what did you consider to be the purpose of the blog postings for this course?" many student responses focused on assessment. Replies that highlighted this included: "for grading us," "as coursework to be graded," "as a means of assessing my understanding of the readings," and "to check we'd read the readings." Remarkably, when asked how this perception changed over the semester, the reactions by this group of students were almost universally positive. This sampling gives a sense of their reflection:

Yes - found total reversal

yes - to better understand the reading & share & expand views

yes cos it was a different style, more specific not just summarising

yes, I now think that they are a good tool for engaging discussion & help understanding

more interaction/discussion & more specific focus on a text

This feedback is encouraging, as it seems to indicate that our use of blogs reinforced the course learning objective to learn critical reading by focusing on close reading of the course texts.

Analysis and Assessment

It is important to preface our analysis by setting the context of the course and explaining some of our paradigms for interpreting this context. A crucial aspect of this case which forms the context for our interpretation of our findings is the composition of the student audience: 82% of students returning surveys reported that they were first-year undergraduates and 71% reported their age as being 18-20. Given the homogeneity of this group, our interpretation of student feedback regarding their learning experience using blogging, has been aided by a recent study by Beaumont, O'Doherty & Shannon. Their study, which focuses specifically on the impact of transition from school to college on student perceptions of feedback, concludes that first-year students judge the feedback they receive in University based on a model widely deployed in schools, the "Dialogic Feedback Cycle" (Beaumont et al 2011, p. 677). As a result, first-year UG students arrive with expectations that are highly focused on numerical values and criteria-led learning. The first year can be fraught with a sort of culture shock, a "feeling of loss of contact and forced reliance on resources rather than a tutor" (677). We noted that the standards set by the "Dialogic Feedback Cycle" formed a dominant influence in setting the terms by which students evaluated their learning experience including the blogging technology. There are several features of the dynamic which our research highlights which surfaced in the assessment phase of this project: (1) the UG focus on numeric evaluation; (2) the UG expectation regarding assessment procedure, including criterion-referenced comments and formative guidance; and (3) the divergence between student and tutor understanding of learning objectives.

Regarding the first two of these three criteria. In addition to the initial expectation centering around assessment described above some students also expressed general dissatisfaction with the mechanisms used for assessment. Of particular pedagogical interest was apparent student confusion as to the learning objective for student commenting on texts. When asked, "In comparison with your other courses, in terms of tutorial preparation did the tool lead you to write in a way that was more formal or informal?" students responded 37% formal, 40% informal, and 23% not sure. This nearly even split, seems to indicate that there was a lack of clarity regarding the mode of writing which students were expected to produce, and that clarity and structure of communication with students should be an area of focus for courses which integrate blog writing.

As regards the third area, we found that feedback provided by course tutors in interviews was in many cases completely inverted positive student self-perception. One tutor remarked:

Rarely do the students comment on others comments or ask questions in the comments to get others to engage, appears that they tend to choose another area to comment on instead

Another provided more extended suggestion along similar lines,

I think the students are having a difficult time conversing with one another over the blog, and that partly because they usually post only once, and leave it there. If our aim is to encourage peer-to-peer discussion, this is not happening, at least in my group.

There are several possibilities for interpreting this disjunction in perception between students and tutors. Beaumont, O'Doherty & Shannon note that the students often expect comments that they can use "to improve immediate performance" (684). In contrast, tutors have extensive experience within the University context and are much more familiar with long-term formatively oriented assessment. As a result,

since tutors stated that many students do not apply feedback to future work, there is a mismatch between students' and tutors' perceived value of comments which have power to improve learning and performance in the longer term. (684)

In response to this mismatch, they suggest that academic staff, following Boud and Falchikov (2007), leverage peer and self-assessment. This provides some mediation of student expectations regarding feedback immediacy and draws on a natural feature of the blogging experience. As suggested above, in our assessment of the blog platform, we found that student perception strongly suggested that they found the platform to naturally encourage collaborative learning. With this in mind, our study seems to suggest that it would be appropriate to emphasise peer-feedback in University courses where blogs are being used.

The authors of this study also conclude more broadly that “first-year university feedback practices should be structured to explicitly develop students’ capacity for self-regulated learning” (683). With this in mind, we realised in hindsight that our course pedagogy was already implicitly designed to help students navigate this transition to a certain extent. However, explicit communication to students regarding our intention to help them develop a new capacity for self-regulated learning may have empowered them to make even fuller use of their blogging experience. Being potentially unaware of the transition which they were in the midst of, students were not fully enabled to make use of the tools provided to help them through it.

Concluding Comments

We undertook this project and the succeeding evaluation in order to get a sense of the student learning experience using a SAM-LS. More specifically, we sought to test whether such a platform could be used to help train students for critical reading of texts. In our assessment, this is quite possible: blogs can be a part of a successful student learning experience. However, teaching students with blogs requires some preparation and may best be adapted to a collaborative learning experience. Further, while blogs may be more suited to casual student writing this does not inevitably encourage casual reading. In fact, a SAM-LS may successfully adapt the blogging platform to enhance student focus on texts and enable students to focus on critical reading as a learning objective. Finally, as we have noted above, our affirmation of blogs as a learning tool is only partial. It is important to consider the peculiar needs and abilities of a given student population, and assess whether the ‘culture’ surrounding the tool is well-adapted to these needs. Our context (first-year UG students in the UK) come with a particular set of expectations regarding learning which are likely implicit, and which require that all learning tools (blogs included) be set within the context of the pedagogical structure of the course. In our course, we plan to integrate two responses to this heightened awareness of the student learning context. First, we will further de-emphasise graded assessment and instead affirm student completion of the task with a pass/fail mark. Second, we have modified the course guide and related communication to further emphasise a preference for a casual writing style in order to situate blogs as a social learning tool.

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Biography

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Bibliography

- Beaumont, C., O'Doherty, M. & Shannon, L., 2011, Reconceptualising assessment feedback: a key to improving student learning? *Studies in Higher Education*, 36(6), pp. 671-87.
- Berlanga, A.J., Peñalvo, F.G. & Sloep, P.B., 2010, Towards eLearning 2.0 University, *Interactive Learning Environments*, 18(3), pp. 199-201.
- Brown, J.S. & Adler, R.P., 2008, Minds on fire: Open education, the long tail, and learning 2.0, *Educause review*, 43(1), pp. 16-32.
- Deng, L. & Yuen, A.H.K., 2010, Exploring the role of academic blogs in a blended community: an integrative approach, *Research and Practice in Technology Enhanced Learning*, 5(2), pp. 53-71.
- Deng, L. & Yuen, A.H.K., 2012, Understanding student perceptions and motivation towards academic blogs: An exploratory study, *Australasian Journal of Educational Technology*, 28(1), pp. 48-66.
- Fitzpatrick, K., 2007, CommentPress: New (Social) Structures for New (Networked) Texts, *Journal of Electronic Publishing*, 10(3).
- Halavais, A. 2011, Blogging Course Texts: Enhancing Our Traditional Use of Textual Materials, in RT Scholz (ed), *Learning Through Digital Media: Experiments in Technology and Pedagogy*.
- Harrison, T.M. & Barthel, B., 2009, Wielding new media in Web 2.0: exploring the history of engagement with the collaborative construction of media products, *New Media & Society*, 11(1-2), pp. 155-78.
- Hernández-Ramos, P., 2004, Web logs and online discussions as tools to promote reflective practice, *The Journal of Interactive Online Learning*, 3(1), pp. 1-16.
- Hourigan, T. & Murray, L., 2010, Using blogs to help language students to develop reflective learning strategies: Towards a pedagogical framework, *Australasian Journal of Educational Technology*, 26(2), pp. 209-25.
- Huang, S.H., Chen, C.M. & Guo, J.C., 2012, Consumer Electronics, Communications and Networks (CECNet), 2012 2nd International Conference on, *Using collaborative reading annotation system with self-regulated learning mechanisms to promote reading performance in English*. pp. 3687-90.
- Johnson, T.E., Archibald, T.N. & Tenenbaum, G., 2010, Individual and team annotation effects on students' reading comprehension, critical thinking, and meta-cognitive skills, *Computers in Human Behavior*, 26(6), pp. 1496-507.
- Lick, D.W. & Lebow, D.G., 2003, Medieval scholarship meets 21st century technology part one: The collaborative annotation model, *Online Classroom*, 3(6), pp. 4-5.
- Lim, W.Y., So, H.J. & Tan, S.C., 2010, eLearning 2.0 and new literacies: are social practices lagging behind? *Interactive Learning Environments*, 18(3), pp. 203-18.
- Mendenhall, A. & Johnson, T.E., 2010, Fostering the development of critical thinking skills, and reading comprehension of undergraduates using a Web 2.0 tool coupled with a learning system, *Interactive Learning Environments*, 18(3), pp. 263-76.

- O'Reilly, T., 2007, What is Web 2.0: Design patterns and business models for the next generation of software, , 65, pp. 17-37.
- O'Reilly, T. & Battelle, J., 2009, Web 2.0 Summit, *Web squared: Web 2.0 five years on.*
- Ray, B.B. & Coulter, G.A., 2008, Reflective practices among language arts teachers: The use of weblogs, *Contemporary Issues in Technology and Teacher Education*, 8(1), pp. 6-26.
- Razon, S., Turner, J., Johnson, T.E., Arsal, G. & Tenenbaum, G., 2012, Effects of a collaborative annotation method on students' learning and learning-related motivation and affect, *Computers in Human Behavior*, 28(2), pp. 350-9.
- Read, B 2007, Marginally Better: Software Uses Side Notes to Turn Books Into Discussions, *Profhacker*. From <http://chronicle.com/article/Marginally-Better-Software/8024>.
- Rogers, K. 2011, Crowdmapping the Classroom with Ushahidi, in RT Scholz (ed), *Learning Through Digital Media Experiments in Technology and Pedagogy*.
- Vaughan, N., 2010, Student Engagement and Web 2.0: What's the Connection? *Education Canada*, 50(2), pp. 52-5.
- Ward, J.M., 2006, Blog Assisted Language Learning (BALL): Push button publishing for the pupils, *A Journal for Teachers as Researchers (TEFL)*, 3(1), pp. 1-16.
- Williams, J.B. & Jacobs, J.S., 2004, Exploring the use of blogs as learning spaces in the higher education sector, *Australasian Journal of Educational Technology*, 20(2), pp. 232-47.
- Wopereis, I.G., Sloep, P.B. & Poortman, S.H., 2010, Weblogs as instruments for reflection on action in teacher education, *Interactive Learning Environments*, 18(3), pp. 245-61.
- Wortham, J 2007, Wired Magazine, *After 10 Years of Blogs, the Future's Brighter Than Ever*, 17 December 2007.
- Yang, S.H., 2009, Using blogs to enhance critical reflection and community of practice, *Educational Technology & Society*, 12(2), pp. 11-21.

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